



---

# **Specification Document**

## **Soil Monitoring and Management System**

---

### **Authors :**

Fatma Ezzahra Ben Helal

Ines Mekki

Mariem Hadj Kacem

Rimel Hammami

### **Faculty Adviser :**

Dr. Eng. Mohamed Becha Kaaniche

## Table des matières

1 Use Case Diagram	2
2 Communication Diagram	2
3 Component Diagram	3
4 Package Diagram	3

## 1 Use Case Diagram

Figure 1 illustrates the Use Case diagram of the system, depicting the primary actors and their interactions with various system functionalities. The system accommodates two main actors : farmers and administrators, each with distinct privileges and responsibilities.

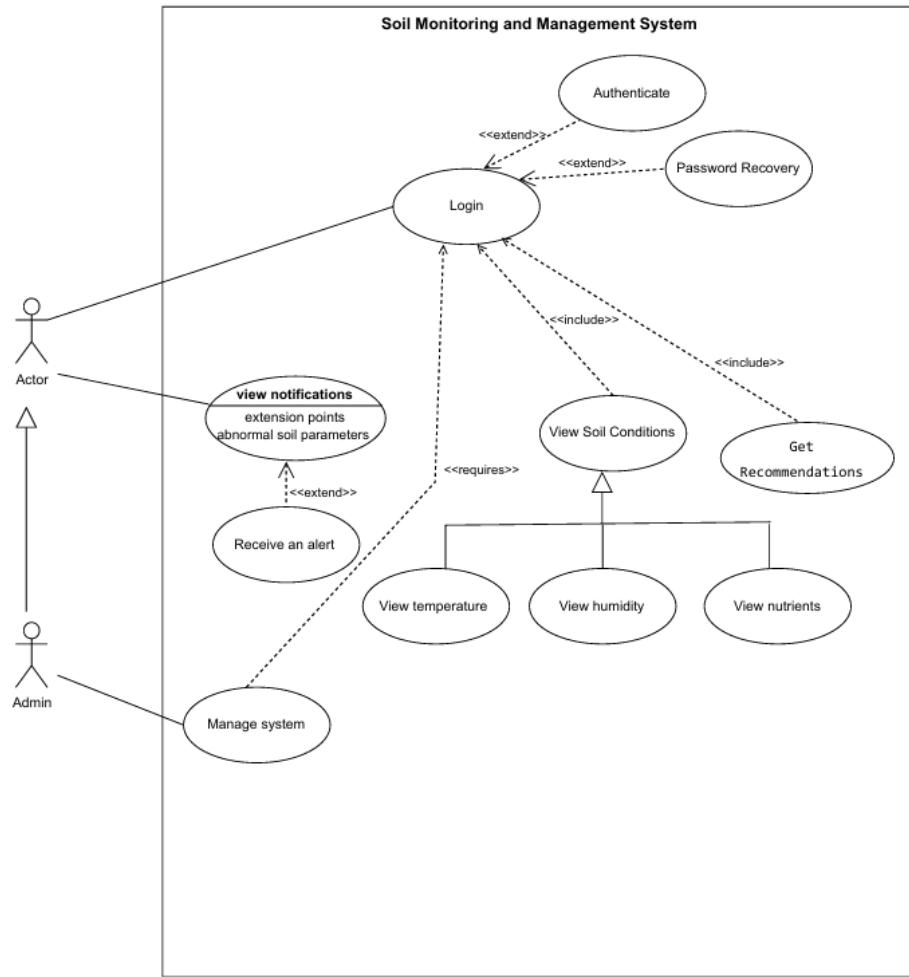


FIGURE 1 – Use Case Diagram.

## 2 Communication Diagram

The communication diagram illustrates the interactive flow between the farmer user and the Soil Monitoring PWA application. This visual representation clarifies the user-system interactions and data exchange processes within the agricultural monitoring platform.

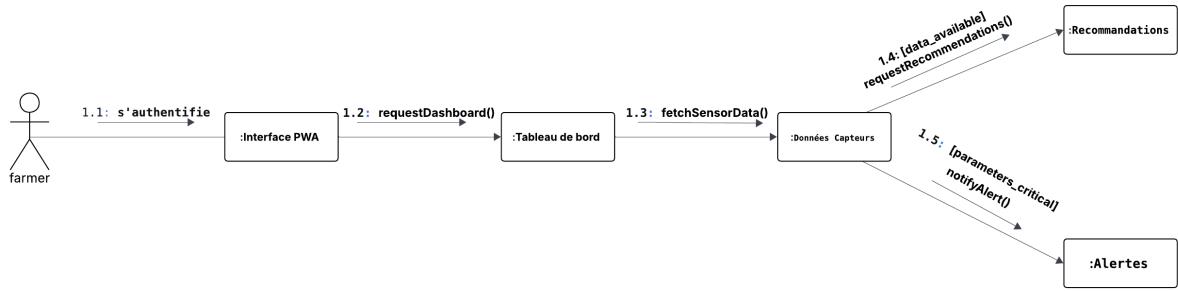


FIGURE 2 – Communication Diagram.

### 3 Component Diagram

The component diagram (Figure 3) describes the logical architecture of the system by identifying its main software components and their interactions. It highlights how the front-end (PWA), middleware (REST API, WebSocket Service), back-end (database, ML engine), and IoT layer (sensors, gateway, MQTT broker) integrate to form the complete system.

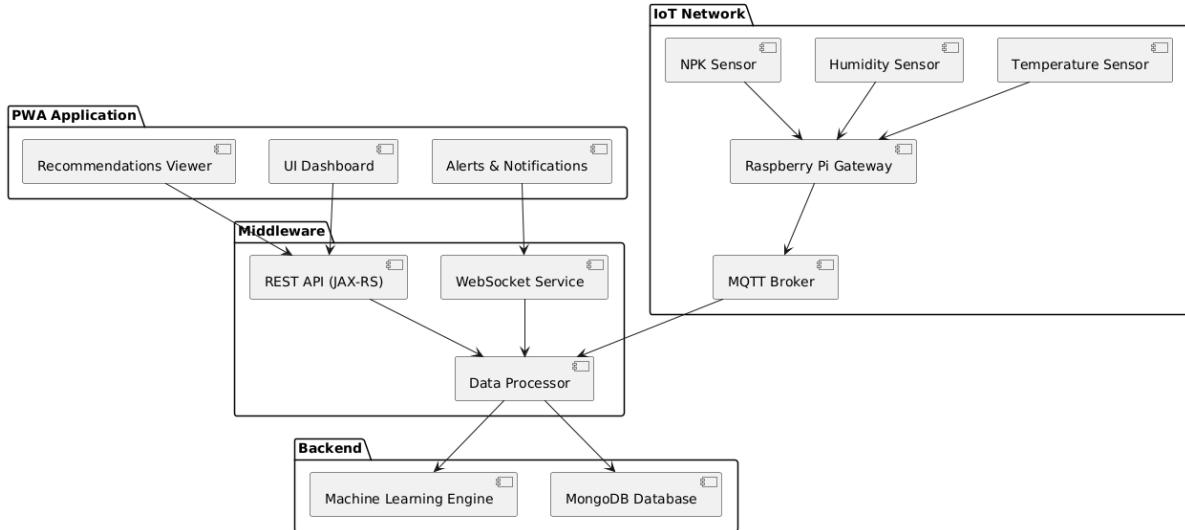


FIGURE 3 – Component Diagram.

### 4 Package Diagram

The package diagram (Figure 4) provides a modular overview of the system, grouping related elements into logical packages. It illustrates the hierarchical organization between the Frontend, Middleware, Backend, and IoT layers, along with their dependencies.

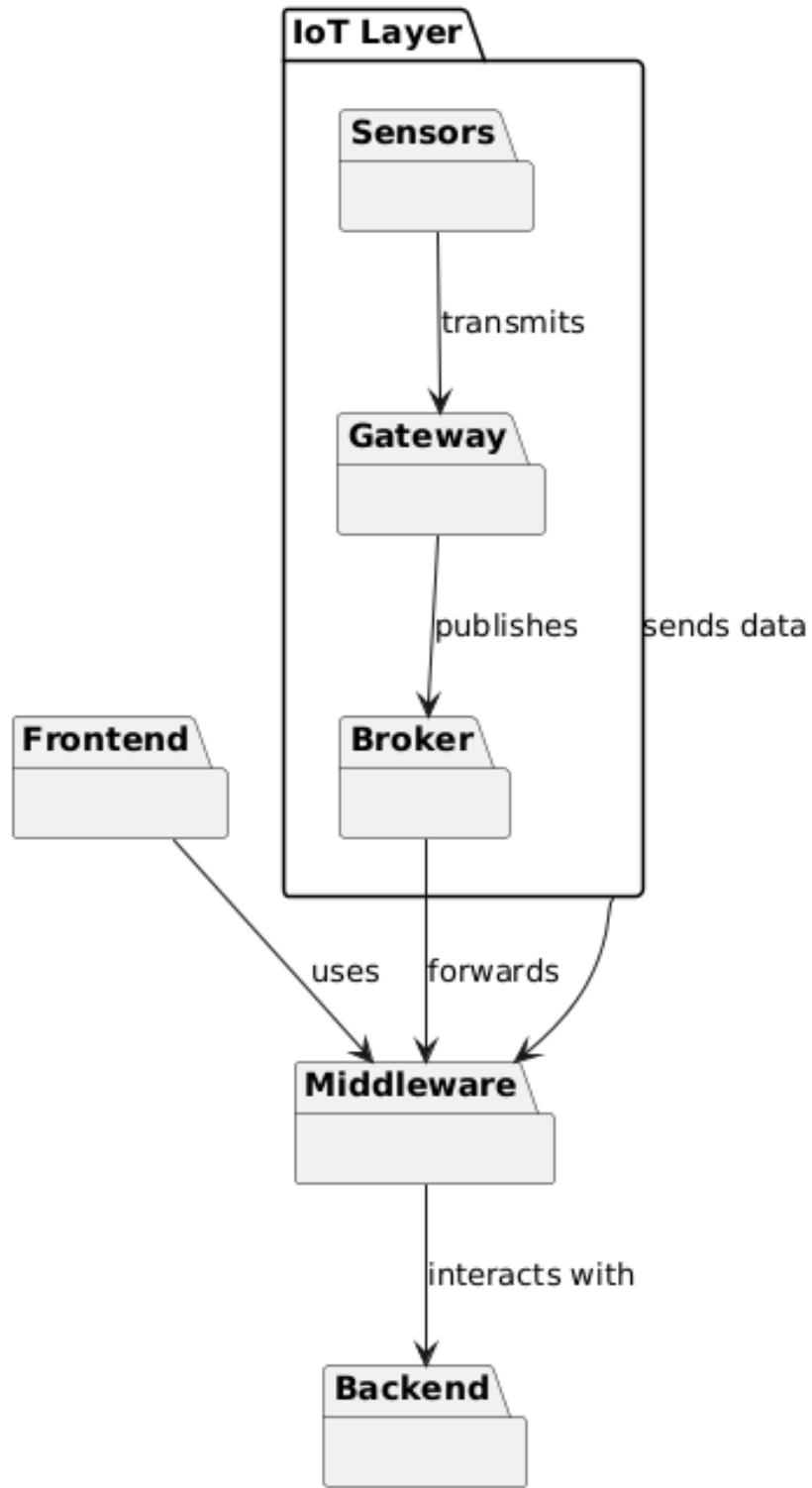


FIGURE 4 – Package Diagram.